

THE AMERICAN JOURNAL OF
OPHTHALMOLOGY.

VOL. XV.

MAY, 1898.

NO. 5.

ORIGINAL ARTICLES.

DETACHMENT OF THE RETINA.—REPORT OF
FIVE CASES OPERATED ON BY THE MUL-
TIPLE PUNCTURE OF THE SCLEROTIC
WITH THE GALVANO-CAUTERY.
FOUR RECOVERIES; ONE
NEGATIVE RESULT.*

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SCHNELLER, of Danzig, in 1881¹ called attention to certain facts which shed light on the nutrition of the retina, or rather on certain elements of nutrition which arrive at different layers of this structure, such as the epithelium, the pigmentary² elements, etc., and shows that the retina itself may be the seat of morbid processes prior to the occurrence of pathological changes in the choroid which so frequently attract attention in connection with the disease.

*Read before the Third Annual Meeting of the Western Ophthalmological and Oto-Laryngological Association, held at Chicago, Ill., April 7-8, 1898.

Why the retina should let go from its cement attachment and particularly in the neighborhood of the rods and cones would give rise to speculation as to the idea of a decrease in the support afforded by the vitreous when of normal consistency unless it should be shown that certain relative differences exist between different persons as to the consistency of the vitreous, some being of a lighter specific gravity than others as, for example, in myopes, a point which the writer does not presume to say, it being of course understood that physiological eyes alone are considered. Were this found to be the case it would place in a certain group eyes more likely to become the prey of detachment than others even as healthy eyes beyond the fact that they would so suffer under pathological or traumatic conditions.

Czerny³ found that the effect caused by continuous concentration of the solar rays upon the retina of frogs, birds, and some mammals was to bring about a disintegration of the external layer next to the choroid; and a separation of the rods and cones from the pigmentary surface of the choroid took place. The pigment remained with the choroid and streams of leucocytes appeared among the débris of the broken retinal elements respectively, the rods and cones.

Retinitis, commonly called chorio-retinitis, is always accompanied by pigmentary alterations, which are swept as it were by the tide of exudation into the structures of the retina. This pigmentary epithelium receives its nourishment from the choroid while the rods and cones get their supply from the capillaries of the retina out of the retinal arteries. Kuehne⁴ speaks of the so-called retinal purple being secreted by the choroid as the pigment is regenerated, and that the inflammations of the external layers of the retina are to be met with only as initial lesions in exudative choroiditis, while inflammations of the inner layers of the retina may take place without any lesion whatever of the choroid, and frequently do. It is, moreover, a fact hardly within dispute, that we frequently have retinitis of the inner layers, without detachment and without choroidal implication, and as Czerny³ says, "detachment is preceded by alterations in the epithelium, and in the rods and cones it follows that the adherence between these two layers diminishes; nevertheless, when reunion occurs and the restitution of the function of the retina takes place, as it sometimes

does, even after a year of detachment, the retinal vessels seem to be able to supply a certain (diminished to be sure) amount of nourishment to the rods and cones." The nourishment thus transmitted from the blood vessels, evidently must consist of transparent leucocytes, which, having escaped from the capillaries by diapedesis, find their way through the external granular layer of Stricker,⁵ including the external fibrous layer, the external molecular (granular or inter-nuclear layer), Landois and Sterling,⁶ the so-called external plexiform (reticular) layer, Norris and Oliver,⁷ and arrive at the base of the bodies of the visual cells in the highest and most perfect condition of normal physiological perfection. When, however, after rupture and separation has occurred, the re uniting of the separated elements is attended by the phenomena of repair common to other tissues, viz., the interposition of connective tissue elements which in time cement together to form a more dense structure, this inhibits to some extent the perfect interchange of nutrition from the source of supply to the distal field of demand. It would be preposterous to claim that the retina receives no nourishment at all from the choroid. As well claim that the heart receives no nourishment from the lungs, or *vice versa*; yet the heart has its own system of blood vessels which beyond question nourish its structure and the lungs the same; both organs are mutually interdependent; so also the choroid and the retina; yet evidently the retinal vessels are there for a purpose, and if not to nourish the light-perceiving apparatus, then why do we have photopsias in choked disc, or blindness in atrophy, so long as there be no interference to choroidal circulation?

Schweigger⁸ (1883) maintains that not only must the etiological factor of nourishment to the retina be taken into consideration, but also that of the nourishment of the vitreous as demonstrated by H. Müller as well as himself. Solutions of continuity can oftentimes be seen in recent cases, these lesions occupying peripheral locations where the retina recovers more easily. In cases, however, complicated with rupture, therapeutic measures are wholly useless, and even the intervention of surgical means, on account of the communication between the vitreous and sub retinal effusion. In cases without rupture puncture followed by diaphoresis with salicylates and pilocarpine may bring about a good result, especially if the detach-

ment be a recent one. This author reports several cases of spontaneous cure, and in one case the detachment was restored after eight months with V. = $\frac{20}{LXX}$ and Sn. No. 2 at 7 inches. In another case the retina resumed its position within a year. The author, however, reports disappointment with puncture, the results having been found later to have been but transitory. Leber⁹ (1882) discusses two theories explanatory of detachment visible with the ophthalmoscope, one that the secretion of liquid by the choroid forces the retina inwards away from the pigmentary layer of the choroid, and the other that of retraction or attraction exerted within the vitreous in front of the retina pulls the retina inwards, as Müller expresses it. This theory of Müller is, according to Leber, applicable to the eyes that are phthisical, that is, where the tension is minus, but he does not think it applies to eyes with a scleral puncture from foreign bodies which become afterwards encysted. In the diagnosis of detachment we are constantly forced to give consideration to the idea of abnormal secretion. Cases frequently occur where the ophthalmoscope reveals no trace whatever of connective tissue development in the vitreous, but where we readily, in the fact usually, observe floating bodies in the vitreous, with liquefaction. The tension may remain unaffected, normal, and still the retina slips away from its attachment, crowds itself forward into the vitreous, and in order to give it place, a certain volume of vitreous seems to become absorbed while the fluid behind goes on forming, or if there be a rent in the retina the simple change of place which takes place in the location of the fluid allows a portion to occupy the sub-retinal space instead of the vitreous. Samelsohn (*loc. cit.*) finds it difficult to understand how the theories of Leber and Müller can explain all the facts under consideration. If the perforation is primitive and tension remains normal in most instances, it is easy to suppose that the retina being perforated, the vitreous would not cause the retina to let go. This last observer remarks that if the tension be carefully taken there will oftentimes be found a diminution more or less transient and irregular. This he observes in connection with a deep anterior chamber in certain instances. Stilling¹⁰ (Strassburg, 1884) reported a case of enucleation where it was found that the vitreous had condensed and shrunken to considerable less size than normal while a certain degree of homogeneity

was maintained. He claimed in this case the detachment could not be explained on the grounds of being forced away from the sclerotic, nor by the idea of perforation, but that it was drawn by attraction of the shrinking vitreous in its retreat toward the center of the bulb.

The committee appointed by the Ophthalmic Congress of Paris, reported by Poncet¹¹ in 1897 that (*a*) the proportion of double detachment to simple detachment is as 1 to 9; (*b*) detachment may occur at the most tender age; the proportion increasing between the ages of 10 to 20; from 30 to 40 proportion remains equal; (*c*) increasing again from 40 to 70, maximum at 60; (*d*) men are affected in proportion of about 62 per cent., women 38 per cent.; (*e*) among professions the most frequent are writers, scholars and students; (*f*) myopia furnishes 37 per cent. of cases, choroiditis 16 per cent., traumas 19 per cent., various 28 per cent; (*g*) the consequences are frequently atrophy of the globe. Operative results among members of the Society up to that time are not very satisfactory. Coppez¹² reports 18 iridectomies according to the modified operation of Wolf, with 1 complete cure and 5 disastrous results, the rest partial success only. M. Horstman,¹³ before the Ophthalmic Congress at Heidelberg (1891), reports having met with 61 cases of detachment during a period of six years, 33 were men and 28 were women, 19 were kept under observation three years, among which 3 recovered entirely, the first was a man of 19 years, the second 48 years, and the third—a myope of 6.00 D., 38 years. All these cases were non-perforating. In one case he observed the pigmentary layer follow the retina two years after the commencement. In other cases marked changes were present in the choroid. He claims that there are two classes of detachment, one due to choroiditis and the other to retraction of vitreous. The tension remains normal in the exudative variety, in the other it was minus. Treatment, rest and diaphoresis.

Hirschberg¹⁴ (1891) reports three cases of spontaneous recovery among myopes. Treatment simple, rest and medication, diaphoresis, etc.

Boucheron¹⁵ (Paris, 1891) claims a certain curative procedure which he had practiced with success, which he calls dialysis undertaking to cause the sub-retinal fluid to become absorbed and eliminated through the anterior chamber and filtra-

tion spaces and ciliary circulation. He operates on the anterior chamber: *keratomy*, *sclero-keratomy*, and *iridectomy*. These have one objective point in view, elimination anteriorly. General treatment is added. Paracentesis may be repeated.

Stedman Bull¹⁶ reports (Amer. Ophth. Soc., 1894) a series of 38 cases of traumatic detachment and spontaneous recovery. His treatment consisted in confinement in bed, pressure-bandage, pilocarpine, bicarb. sodæ, iodide potass., internally. Occasionally he punctures the sclerotic with a von Graefe knife as near to the seat of detachment as possible; the conjunctival opening being left in the form of a valve. He advises never to resort to puncture where there is any inflammation present in the globe.¹⁷

M. G. Martin¹⁸ (Bordeaux) employs for puncturing the sclerotic in certain cases of anterior staphyloma and in detachment of the retina, the galvano cautery, producing a certain open fistula which permits the sub-retinal effusion to escape in addition to an irritation which causes an adherence between the retina and sclerotic. He modifies this operation in some cases by using the actual cautery (a small iron instrument heated sufficiently to accomplish igneous puncture). This he prefers to the platinum, which bends easily.

Abadie¹⁹ (1871) pronounces ablation of the retina a local disease, due to local causes, and claims a surgical procedure to be the most rational. He recognizes that sudden detachments come on in myopic eyes when the patients are in the best of health and no indication whatever of a diathesis is present. The same author²⁰ eight years later (1889), reporting *in extenso*, changes his views somewhat; he refers to simple puncture, drainage, puncture by means of the galvano-cautery and electrolysis, all of which he had tried with only transient, never permanent results. Likewise, with all purely medicinal means, prolonged repose, mercurials, pilocarpine, diaphoresis, etc., the general rule in his hands was to procure only moderate benefit which failed to compensate the patient for his fatigue and confinement. Still he, like confrères of that time, felt indisposed to abandon his effort, convinced that the vast majority of detachments occurs in eyes myopic where gradual distension of the globe provokes a solution of continuity between the retina and choroid. In order to procure (1) an adherence of the retina at the place of detachment, and (2) to arrest as far as pos-

sible the distension of the globe, he proposed to accomplish the double result, first by practicing a free opening by sclerotomy, and second by producing irritation at the point of opening by injecting five or six drops of a solution of: Tr. iodine 5 grammes; Aquæ destill., 5 grammes; Iod. potass, 0.25 centigrammes, by means of the syringe of Pravaz. The evacuation of the fluid is then followed by a slight inflammatory process which he claimed agglutinates the retina to the choroid. A year later, at the Ophthalmological Society of Paris,²¹ he confirms his former opinion, and refers to an instrument composed of a canular knife with which he makes both the puncture and the injection. In 1893²² he advocates electrolysis. Galezowski,²³ Meyer, Chavallerau and Valude all contest with Abadie his claims, and refer to the same procedure having been reported by Schoeler, and that neither a sufficient number of cases nor any adequate amount of time has been forthcoming to demonstrate whether this procedure would prove permanent in its results or not.

DeWecker²⁴ (1882) speaks of numerous experiments in his clinic with the galvano-cautery in the manner formerly advocated by Abadie, and expresses surprise that the reaction from this instrument should be so slight. This kind of a puncture, he reports, left an opening sometimes which remained six to twelve days, afterwards the ophthalmoscope reveals the cicatrix resembling a choroidal rupture.

Wolf²⁵ (Glasgow, 1885) performs puncture with a broad needle with a groove on one side which facilitates the escape of the fluid. He also uses a spatula to open the wound if any fluid remains. He has reported cases of cure with vision equal to counting fingers at one and one-half meter distance.

Mittendorf²⁶ (1885) claims that certain detachments, particularly those attended by a decrease in tension, resist all treatment. He finds his best results to come from pressure-bandage and complete freedom from accommodation, pilocarpine injections, jaborandi, mydriasis.

Dansart²⁷ (1885) reported 23 cases of detachment in which he employed the procedure of Wolf with the addition of iridectomy either before or after the puncture. In some of his cases he obtained fairly good results as to vision, in others only slight improvement.

Warlomont²⁸ (1886) discusses critically the procedure of

Dansart and writes interestingly on the subject of iridectomy alone or as a modification of Wolf's operation for detachment. He favors it on the grounds that a general beneficial result can be expected from iridectomy in all cases of hypersecretion in the globe; he believes that von Graefe himself might possibly in time have to come to the use of iridectomy for detachment as well as for the glaucomatous process. His method as to technique, is (1) iridectomy, (2) horizontal rest in bed, (3) pressure-bandage, (4) the use of pilocarpine; four or five injections are to be given to each patient, but he does not specify how often nor how much.

Brailey²⁹ (1885) reports the case of a man who, while passing along through a tunnel, suddenly became blind, probably from hæmorrhage. Fourteen years afterward he was seen by Brailey who found double detachment. An iridectomy was made upwards with some benefit to vision. Afterwards a scleral puncture was made which resulted, according to the report, in almost complete restoration of sight.

Coppez³⁰ (1887) reports 18 iridectomies in selected cases, all recent; he obtained one complete cure, five operations were disastrous. With the operation of Wolf, modified by iridectomy, in 17 cases he obtained two complete cures and an amelioration in nearly all other cases; in only two cases could he conclude that the operation aggravated the existing conditions.

Sutphen³¹ (Newark, 1889) reported a case of operation by puncture on both eyes of one patient with a complete favorable result on one eye and on the other *nil*. The patient was obedient in every way and remained in bed many weeks.

Schoeler³² (Berlin, 1889) reported the use of tr. iodine two to six drops injected into the sub-retinal space after puncture and escape of the fluid. There was moderate pain, some decided though not high reaction, followed by conjunctivitis, (bulbar), which disappeared in a few weeks. Positive good results were claimed but no statistics given. This author reports again (1886)³³ confirmation of his former views, and especially in cases where some vision still remains in the eyes, *i. e.*, partial detachment.

M. F. Eve³⁴ (1895) reports to the Ophthalmic Congress, Paris, a case which had been treated by ordinary methods—pilocarpine, iod. potas., prolonged rest, pressure-bandage, etc.,

without effect. He then introduced, after incising the sclerotic, a canula, evacuating the fluid, after which he passed through the canula a horse-hair which he left in the wound for drainage. Three days later he was compelled to remove the hair on account of the excessive reaction. Some days after that the field of vision become normal with V.= $\frac{6}{xx}$. Opacities in the vitreous were present and persistent; these interfered with further improvement.

M. Terson³⁵ (1895) reports the employment of electrolysis with a current of five milliampères; he regards it superior to puncture.

Casey A. Wood³⁶ (Chicago, 1886) reviews the different methods of operative procedure, including the recent experiments of Deutschmann (incision of the vitreous and introduction of sterilized vitreous of rabbits), and comes to the conclusion that none of these methods possess decided advantage over the old-time procedures—rest, bandage, diaphoresis, etc. Numerous reports of spontaneous cure lead to the supposition that in many cases of reported cure following operations we do not know but that if those cases had been subjected to treatment without operation results equally favorable might have been obtained.

Montgomery³⁷ (1897, Intern. Med. Cong.) claims that the theory of Leber can not be accepted because ordinary detachment is caused by choroidal exudation. The hypothesis of Rhaelmann is not free from objections. The experiments of Schoeler and Deutschmann are also founded on purely speculative grounds, besides they are not free from danger—a point we should never forget in our therapeutics.

In view of the numerous authorities which have been cited, and the general pessimism which seems to prevail as to the advisability of operative interference at all in cases of detachment, it would seem almost presumption for the writer of this article to set up an opinion on the subject, or to undertake to add anything to what has already been said. However, while a few swallows do not make a summer, the writer is of the opinion that every case treated or operated should be reported, and each experience, however humble and unpretentious, should be reported for the general good of the profession and for the sake of truth. With this explanation, therefore, the writer begs leave to report the five following cases in which

good results were obtained in four, with one negative. After having tried puncture for some years, and all the medical measures which have been recommended from time to time, one thing has been constantly forced upon the attention of the writer, viz., that a puncture, however carefully made, is liable to close before quite all of the fluid has been evacuated, and certainly often fails to provide for the escape of the exudate formed after the puncture. A detachment, therefore, partially relieved, is liable to relapse from the re-formation of fluid exudate.

Chemical irritants, iodine, etc., produce exudation, and they may favor union if the opening be large, but if the latter be small or if it should close again the sac will re-fill. Moreover, an opening, if too large, favors rapid decrease in tension. Electrolysis is fraught with too much pain which even cocaine will not overcome. Therefore, a gradual evacuation, kept up for a long time without irritation, seems to offer the best means of allowing the retina to resume its place. This is better accomplished by means of more than one puncture, made in such a way as not to be too large, and at the same time remain open. The writer has not met in his reading the suggestion of multiple puncture of the sclerotic—that is to say, a puncture at the seat of the lesion, and then by withdrawing the instrument making another, a counter-puncture, in some other part of the globe, usually on the other side or at least one-third of the diameter of the globe removed from the first puncture, provided the detachment be large; not so far away if it be small. The diagnosis is to be made out as to the location and size by examination in the upright image. The head is to be tilted to one side and then the other until the most dependent portion is determined; this is the location of the first puncture. The second is made in or near the edge of the detachment if it be large or even well in it, usually not in the sound retina when the detachment is small, and yet far enough away to get the beneficial mechanical effect of a vent, so to speak. The further object of the two punctures is to avoid making the one so large and to facilitate gradual and prolonged filtration of the fluid out of the sub-retinal space. The openings are made with the galvano-cautery plunged in directly at right angles to the sclerotic, and not in such a way as to form a valve. The point which is white or red should be held a moment in place with-

out turning off the current and gradually withdrawn. This burns a round hole which will not close as rapidly as one made with a knife or otherwise; the writer has seen it remain open six or eight weeks, in one case ten. The new exudate will escape as fast as it is formed; usually the retina attaches itself at the periphery first, and lastly at the point of puncture. The reaction is never violent, in fact, there is no milder, kinder, or less irritable procedure possible, so far as the experience of the writer has gone.

Simple as this seems to be, it has served a good purpose. The lack of many cases is to be regretted. The one unfavorable report below was probably an unsuitable case for any operation or treatment.

CASE 1.—Three years ago a farmer, aged 40 years, tall and slender, but of good physique and healthy, fell out of a hay-loft alighting between two joists of the floor below, which gave way; he was caught by both arms in the axilla; he was severely injured, jarred and stunned; he was removed to the house where he lay several weeks. Two months after this he discovered that one eye was blind. I found almost complete detachment. Puncture with cautery through sclerotic back near the equator at external canthus below external rectus; second puncture at inner canthus below caruncle; liberal exudate escaped; rest, pressure-bandage, pilocarpine, iod. potass. Treatment, four weeks; recovery. $V.=\frac{20}{LXXX}$, and this was improved eight months later; no relapse, now three years.

CASE 2.—Preacher. Has been nearly blind in left eye for ten months. Large detachment, not however complete. Conservative (medical) treatment in bed for four weeks; little improvement; more than the lower half of the retina remained detached; two punctures in lower half of the globe; retina returned to place in five weeks; has remained two years. $V.=\frac{20}{C}$.

CASE 3.—Lady, aged 46 years; good health; $M.=2.00 D$. Six months ago sight in left eye failed suddenly. Lately has not been able to see to count fingers at 1 meter. Outer lower quadrant of retina detached, floating bodies in vitreous. Two punctures in sclerotic with cautery, one above external rectus well back towards equator, the other below and somewhat external to the median line about at the border of the inferior rectus; rest in bed for six weeks. Second puncture at the end of the third week; retina all went back. Last puncture con-

tinued to allow escape of drops of exudate at the end of the tenth week, then closed. $V.=^{20}/_{x0}$; has remained so, now one year. The vitreous at present is clearer than before; complete red reflex from fundus looks fairly well.

CASE 4.—Barber. Had slight retinal hæmorrhage two years ago. Was treated; improved; choroidal patch near macula lutea. While playing with his little child on his lap, the latter struck him on the eye with the back of her hand; sudden blindness; detachment, and hæmorrhage. Two punctures were made at temporal and inferior part of sclerotic; copious sanguino-serous exudate escaped; vitreous still too dark to admit light; can not see fundus except at inner upward side. $V.=$ count fingers at 3 feet outward and downward. Result negative.

CASE 5.—Nun, aged 36 years; sudden blindness after exhaustive vigils. Detachment, lower half of retina, involves macular region. Two punctures; copious escape of clear fluid. Leeches, bandage, pilocarpine, rest in bed; lower puncture still open, fifth week; retina returned to place. Watched case for five weeks more. $V.=^{20}/_{LXX}$. Seen again after one year; retina still in place; other eye myopic 3.00 D.

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EXTRACTION OF IMMATURE SENILE CATARACT.¹

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THE unpleasant situation of the patient as well as the physician whilst waiting for the so called maturity of senile cataract is well known. In many instances we would act cruelly by wasting years, most valuable at this age, looking forward to a stage which is frequently never attained. These considerations have evoked the numerous methods of artificial ripening, none of which, however, has been generally adopted by the profession.

The definition of maturity is differently given, without being satisfactory. Its conception arose more than fifteen hundred years ago from an old mistake of humoral pathology—namely, that cataract is an exudation within the pupillary area which is at first semi-liquid and soft, and afterwards becomes solid by coagulation. Celsus, the first to speak more explicitly

¹Read before the Third Annual Meeting of the Western Ophthalmological and Oto-Laryngological Association, held at Chicago, Ill., April 7-8, 1898.

on cataract, says: "There is a kind of ripening of a cataract. It is therefore necessary to wait with the operation until the cataract is no longer liquid, but has reached a certain consistency by coagulation."

In spite of the true recognition of cataract as an opacity of the crystalline lens in the beginning of the last century, the old teachings and terms were not discarded. Richter, in the first half of this century, confesses for instance, that he did not know exactly upon which quality the terms mature and immature were based. Afterwards Arlt's definition was most generally accepted: "That in a matured cataract the lens lies in its capsule like a ripened fruit, and can be enucleated with ease."

The time has arrived for casting aside inherited theories and fancies and a modification of our views. When dissecting fresh eyes of animals I was struck long ago by the easiness with which the entirely transparent lens develops *in toto* out of its capsule, provided the incision is a large one. The practical question is not one of opaqueness but of coherency, and the old idea that the latter is directly dependent on the former, is incorrect. The lens, with advancing years, becomes more and more coherent, and will allow, after the age of 55 or 60, an easy and complete removal through sections sufficiently large. Some observations have even convinced me that in immature cataract the different portions of the lens are sometimes more coherent than the cortical layers of a mature soft cataract.

My experience coincides with that of my predecessors. The first one to part with the old teachings and actions based thereupon was Hirschberg, of Berlin. He reported in June, 1892 (*Berlin. Klin. Wochenschr.*), 35 cases of extraction of immature cataract, in all of which the development of the lens in its entirety was just as easy as in mature ones. The final results were even somewhat better than those of the 165 remaining cases out of a series of 200. The step taken by Hirschberg was bitterly opposed on theoretical grounds and he found only a few disciples in Germany, one in Italy (Vitali) and, to my knowledge, only one in this country, Dr. de Schweinitz (*Ophthalmic Record*, June, 1896).

I commenced to follow Hirschberg about three years ago, and I want to confess that with some hesitation and anxiety I extracted the first immature cataract. I have now operated 10

cases, which is seemingly a small number, but my experience happily corroborated in every instance the teachings of Hirschberg. I was astonished at the ease with which a lens quite transparent can be developed in its entirety. All that is necessary is a large corneal and especially capsular incision, sufficient to insure an unhindered exit. The latter I make vertically from below upward, going as far as possible behind the iris, and then add two horizontal ones, from the nasal and temporal sides respectively, meeting the first.

It is scarcely necessary to report the cases in full, and I confine myself to the salient points. In a number of them there was only a small central opacity and the peripheral portions transparent enough to allow a plain view of the fundus, after dilation of the pupil. In three, we tested the lens immediately after the operation by laying it upon printed type and found that it was plainly readable through the cortical portions. The vision before the operations was as follows: $\frac{6}{L}$, $\frac{6}{L}$, $\frac{6}{L}$, $\frac{6}{LX}$, $\frac{6}{LX}$, $\frac{2}{L}$, $\frac{2}{LX}$, $\frac{2}{L}$, $\frac{1}{LX}$, $\frac{1}{LX}$.

A small iridectomy was made in each case. In only one instance a small part of the lower posterior cortex was found wanting on examination of the lens, most probably stripped off by too small a corneal incision. It afterwards swelled, but became resorbed without reaction. In one of the cases a secondary discission was performed, and in the last case operated, which is still under treatment, it may also be required. The final results were: $\frac{6}{XII}$, $\frac{6}{XV}$, $\frac{6}{XV}$, $\frac{6}{XV}$, $\frac{6}{XXIV}$, $\frac{6}{XXXVI}$, $\frac{6}{L}$. One patient left for the country, and the glasses were afterwards prescribed by his physician there. Reports good vision. Two were not tested finally.

Two cases in this series, although not senile cataracts, might be worth while reporting more fully. They were a rare instance of congenital central cataract in a young lady of 19. There was a snow-white nucleus in a perfectly transparent cortex. The reported increase of impairment of sight within the last three years indicated a progressive character. Vision in each eye, $\frac{6}{LX}$. I wavered for some time between discission and extraction, but expecting a slow and perhaps incomplete resorption, and being pressed for time, determined on the latter. The sticky transparent lens-mass with a sharp, defined nucleus in its center, was delivered easily and completely. Healing regular. Two weeks afterwards I operated the left

eye in the same manner. In this a discission followed. Final results in both eyes, $\frac{6}{xv}$, reads diamond type.

The conclusions I would like to offer are:

1. A senile lens, however small the opacity may be, is coherent enough to admit of an easy extraction *in toto* by the proper method.
2. To wait for the so-called maturity is unnecessary. The operation can be performed as soon as the sight is impaired to such a degree, that the vocation or comfort of the patient is interfered with.
3. All operative procedures for artificial ripening are unnecessary and contraindicated, exposing the eye to a two-fold danger.

EXCISION OF THE TARSUS FOR EXTREME NON-CICATRICAL ECTROPIUM OF THE LOWER LID.¹

BY A. E. PRINCE, M.D., SPRINGFIELD, ILL.

I OFFER for your criticism to-day a very simple expedient for the correction of a deformity which presents itself in cases of extreme non-cicatricial ectropium of the lower lid. This condition arises most frequently in elderly individuals, having tear-duct obstruction, associated with a general relaxation of the skin and mucous membrane. The frequent repetition of the act of wiping away the tears encourages the development of an ectropium which, when established, is aggravated by exposure to the air. Continued irritation causes the conjunctiva to swell, forcing the lid still further from its normal position, until finally, the eversion is complete. The mucous surface often appears extremely angry, red, and even granulous, giving rise to the term ectropium sarcomatosum. In the incipency of the development of the condition, it is sufficient to restore the drainage of the lachrymal duct, and cause the patient to massage the lid with vaseline by means of an up-

¹Read before the Third Annual Meeting of the Western Ophthalmological and Oto-Laryngological Association, held at Chicago, Ill., April 7-8, 1898

ward and inward stroke of the fingers. Caution him against the application of the handkerchief in such a manner as to increase the tendency towards eversion.

When the condition has progressed beyond this point, the conjunctiva becomes hypertrophied, and the tarsus becomes misshapen and ceases to afford any support to the lid. The palpebral surface becomes callous, and the function of the Meibomian glands is ultimately destroyed. The patient presents the hideous appearance so often seen among the "blear-eyed" beggars of the Orient, but fortunately, comparatively seldom met with among even the neglected poor of our own country.

To correct this deformity, Snellen has suggested a form of suture familiar to all of us, by which he attempts to draw the lower cul-de-sac downward, and secure it to the skin of the cheek. The results of this operation are not satisfactory. The Tarsorrhaphy, Dieffenbachs' operation, Adams' operation and von Graefe's operation, I have employed at various times in the commencement of my practice.

They all have the effect of shortening the lower lid, and improving the condition, but it has been my observation in my own cases, that when the ectropion is extreme, the results obtained from any of the above procedures, are not always satisfactory.

Of the operations above mentioned, I prefer that of Adams, which consists of excising a V-shaped piece extending through the skin tarsus and conjunctiva. Such a wound must be treated with great care, to secure union by first intention. Should the union not occur, malformation of the margin would be the almost inevitable result.

The case which led me to deviate from the above classical lines, is that of an old gentleman who consulted me about fifteen years ago, on account of senile cataract. The tissues about the eyes were all relaxed, and the mucous membrane was very much irritated by the exposure. The tears flowed constantly over his cheeks, owing to the malposition of the lids. There seemed to be no retro-tarsal fold of the lower lid. The version was complete. There was no cicatrization of the skin of the lid, and the whole difficulty had arisen from the relaxation of the palpebral structures. His arteries were atheromatous, and I feared that an attempted Adams' opera-

tion might result in a condition which would not improve the chance of a cataract extraction.

While studying his case, the idea of excising the tarsus presented itself. This operation I did on the lower lid of each eye. The result following the removal of the tarsus was more satisfactory than I had anticipated. All of the ectropium disappeared. The requisite lateral cicatrization occurred during the process of healing, thus shortening somewhat the lid, and assisting in holding it in contact with the cornea. I thought at first that an entropium might be the result, but no lashes touched the cornea, and in three weeks from the date of operation one would scarcely have known that anything had been done. My gratification was increased by a successful extraction of the lens at a later date.

I was so well satisfied with the result of this operation that I decided to repeat it, should a similar case present itself.

The result of the second case was as gratifying as the first, and from that date to the present time, with one exception, I have done no other operation for complete ectropium of the lower lid, not due to cutaneous cicatrization.

In the exceptional case, I made an Adams' operation. The results were satisfactory to the patient, but a slight irregularity in the margin of the lid remained, which led me to think better of the tarsus excision.

The operation, as I perform it, consists of slitting the canaliculus, and making an incision in the conjunctiva about 1 mm. removed from the opening of the Meibomian ducts, carrying this incision the whole length of the palpebral aperture vertically through the conjunctiva and tarsus by means of a Graefe knife. From the middle portion of the tarsus, the conjunctiva is then separated for a few millimeters, after which the tarsus is divided. Each free end is now grasped in turn by means of a forceps, and dissected out to its extreme limits, care being exercised not to excise any conjunctival tissue. Stevens' tenotomy scissors is the best instrument to use for this purpose. No sutures are found necessary. A bandage is applied to be worn for a few days. Direction is given to massage the lid with vaseline, in an upward and inward direction.

In the absence of general anæsthesia, it will be found best to inject a 4 per cent. solution of cocaine underneath the tar-

sus and apply a 16 per cent. solution to the conjunctiva by means of a cotton applicator.

The permanency of the operation may be illustrated by the case of Mr. William Coleman, of Beardstown, Ill., who came to me about ten years ago, suffering with extreme ectropion of the right lower lid and obstruction of the tear-ducts. The case was very much aggravated by frequent applications of his handkerchief and presented a distressing appearance. A 4 per cent. solution of cocaine was applied to the mucous surfaces and an 8 per cent. solution was injected underneath the skin. A longitudinal incision was made through the tarsus close to the openings of Meibomian ducts. The tarsus was then divided and each half dissected out with delicate scissors. He returned home the next day.



The continuous line in the cut represents the incision through the conjunctiva and tarsus. The dotted line indicates the division of the tarsus underneath the conjunctiva after which each half is to be grasped by means of forceps and dissected out to its extreme limits.

Since that time I have seen him on various occasions. The lid has remained in position and the margin of the lid has appeared normal. On March 14, 1898 (last month), he returned to me on account of an ectropium of the left lower lid, which had developed during the past year. The condition was not so bad as that of the right eye had been. I subjected him to the same operation. I saw him on the following day, when the apposition of the lid to the cornea was found to be satisfactory.

A case which I hoped to be able to present to you in person is that of Mr. J. W. Clodfelter, of Hillsboro, Ill, aged 70 years. He came to me on October 1, 1897, with complete eversion of the lower lid of the left eye. This condition had existed for several years. The conjunctiva was congested and

hypertrophied from the atmospheric exposure and applications of the handkerchief to remove the tears which gathered in the eye. He had had no treatment of a surgical character. All local applications which he had employed from time to time had been of no avail.

He preferred not to take an anæsthetic, and accordingly I made a hypodermic injection of a 4 per cent. solution of cocaine between the tarsus and skin of the lower lid, and applied a 16 per cent. solution to the mucous membrane. The bandage was continued for two days, when the case was discharged well. After two weeks he reported as follows: "The lids are in position, and I feel greatly benefited." On March 18, 1898, six months after the operation, I saw him, and the result remained perfect.

The futility of non-surgical treatment in these cases is illustrated by the case of Mr. L. J. Brown, of Nokomis, Ill., who was treated for three months at the Illinois Charitable Eye and Ear Infirmary, on account of ectropium of the lower lids, to get him ready for a cataract extraction. He was called home on account of sickness in his family, and subsequently was brought to me. I excised the lower tarsus, and a week subsequent extracted the cataract, with a good result.

The objections to this operation which may be urged are two, viz., (1) the Meibomian glands are destroyed, and (2) the removal of the tarsus takes away the vertical support to the margin of the lids.

To the first objection I will answer, that while it is theoretically well-founded, I have seen nothing of a practical character which makes me consider that it has any ground which entitles it to recognition. The second objection is not a statement of fact. The margin of the lid is supported by the commissures, and the lateral contraction in the course of healing has seemed sufficient to insure the apposition of the margin of the lid to the surface of the cornea without exercising any undue pressure.

It is obvious that the operation is not indicated in cases of minor degrees of displacement; likewise, it is useless in cases of cicatricial ectropium; but if tried in properly selected cases, the practical results will be sufficiently satisfactory to insure its repetition.

CENTRAL AMBLYOPIA IN A DYE-WORKER PROBABLY PRODUCED BY INHALATION OF THE ANILINE DYES.¹

BY CLARENCE A. VEASEY, A.M., M.D., PHILADELPHIA, PA.,

ADJUNCT PROFESSOR OF DISEASES OF THE EYE, PHILADELPHIA POLYCLINIC—
DEMONSTRATOR OF OPHTHALMOLOGY, JEFFERSON MEDICAL COLLEGE.

IN connection with the other cases of visual disturbance reported this evening, the notes of the following somewhat unusual case may be of interest.

A. G., a male, aged 53 years, was referred to me on July 1, 1897, by Dr. W. W. Keen for an examination of his eyes. His vision had been gradually failing for about two months, having been first observed as a slight "fogginess," and during the three weeks prior to the examination had become much worse. The patient himself volunteered the statement that he was not troubled so much because he could not see objects, but because they always appeared to him as if seen through a "dense fog." Two years before the patient came under my observation, there had been a right facial paralysis, but the recovery had been complete with the exception of a slight weakness of the orbicularis palpebrarum, which caused a moderate degree of ptosis at times. There had never been diplopia, and the pupils were equal in size, 4 mm in diameter, and normal in their reactions. There was a small pterygium on the nasal side of each eye.

The patient was tall and exceedingly thin, and looked as if the process for the assimilation of food was but improperly effected—in fact, the general appearance was that of a man suffering from malignant disease. He had lost nearly all of his teeth, and there was some ulceration of the buccal and nasal mucous membranes which was afterwards ascertained to have been produced by the action of bichromate of potassium. There was no history of the use of alcohol, and tobacco was employed only in moderate quantity, about one ounce of mild

¹Read in the Section of Ophthalmology of the College of Physicians of Philadelphia, April 19, 1898.

smoking tobacco being used in a week. Specific history was denied.

The visual acuity of each eye equaled $\frac{5}{112}$, and there was no further impairment of accommodation than was usual for his age, nor was there any muscle imbalance. With the following correction vision in each eye equalled $\frac{5}{V}$ but was very foggy.

O. D. + S. 1.25 D. \ominus + C. 75 D. ax. 165° .

O. S. + S. 1.25 D.

The ophthalmoscopic examination revealed clear media, oval discs with the edges everywhere veiled, veins exceedingly full but not tortuous, arteries nearly normal, some thickening of the fiber-layer of the retina immediately surrounding the discs, but no hæmorrhages—in other words, a low-grade optic neuritis.

The visual fields, as shown in the diagrams, were concentrically contracted for form and colors, a small green field,

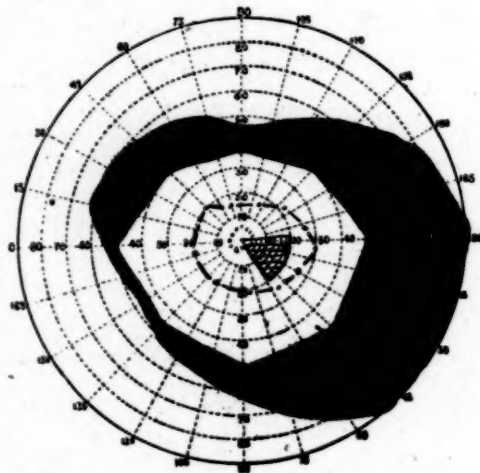


FIG. 1.—RIGHT EYE.

however, being preserved. There was a large fan-shaped central scotoma for red and green in each eye, in the right extending outward, and somewhat upward, 20° from the fixation point and downward to the same extent, occupying nearly a quadrant of the central area of the field. That of the left eye was about 20° smaller. The size of the scotomata appearing somewhat incompatible with the visual acuity as obtained

through the correcting lenses, the fields were carefully taken several times with the same result from each examination.

In seeking the cause of the above described condition, it was found that the patient had been a worker in dye works for twelve years and that during the last seven years of this time he had been what is known as a "weigher." It was his duty to weigh and dispense the different ingredients from which the dyes were mixed and in doing so he was obliged to remain in a small room with comparatively no ventilation for two or more hours every day. There was a considerable amount of dust consequent upon the handling of the chemicals which kept the atmosphere in the room, according to his expression, "as thick as smoke," and the inhalation of this produced symptoms so severe at times that he almost choked.

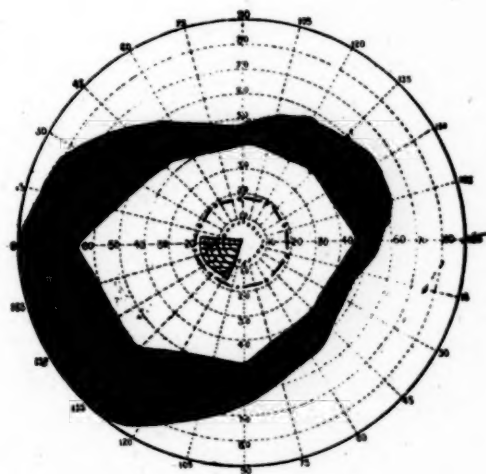


FIG. 2.—LEFT EYE.

Careful inquiry elicited the fact that the following chemicals were employed: Chloride of ammonium, carbonate of sodium, sulphate of copper, sulphate of iron, bichromate of potassium, chlorate of potassium, and the aniline salts.

So far as could be ascertained there has been no record of any case of central amblyopia produced by any of the above chemicals excepting the last, and it is difficult to understand in what manner they would do so except with chlorate of potassium, from which the possibility of an amblyopia arising

through a coexisting nephritis has been suggested by Knies² and others, though no cases are recorded. In my own case the urinary examination was negative.

Mackinlay³ records a case, however, among workers in the aniline dyes in which there was marked pigmentation of the cornea and conjunctiva and reduction of the visual acuity, though the condition of the cornea was such that no view of the interior of the eye could be obtained. Other cases have been reported in which, aniline existing as an impurity in nitrobenzol, the symptoms have been a moderate disturbance of central vision, accompanied by a form of retinitis with distended veins, discoloration of the eye-grounds and a few hæmorrhages.

From these observations it seems probable that it was the aniline that gave rise to the toxic symptoms in my own case. It is believed that most of it entered the system by way of the respiratory tract though some, to be sure, may have entered through the skin. Be this as it may, the employment of a respirator during the period of work and the internal administration of the sulphate of strychnia caused amelioration of the symptoms in two weeks' time, the patient stating that the fog had become much less dense.

It is a matter of some regret that it has not since been possible to examine the condition of the eye-grounds or to take the visual fields, though a letter from the patient received within the past week stated that he was so much improved that he did not think it necessary to come to see me again.

²Quoted from de Schweinitz's "Toxic Amblyopias," Philadelphia, 1896.

³Quoted by Casey Wood, "The Toxic Amblyopias," *Annals of Ophth. and Otol.*, 1892-94. *Trans. Ophthal. Soc., United Kingdom*, 1886, p. 144.

EDITORIAL NOTICE.

The transcription of the shorthand report of the discussions following the original papers read at the meeting of the Western Ophthalmological and Oto-Laryngological Society has only just now come to hand. We will publish it in subsequent numbers.

CORRESPONDENCE.

VISION OF RECRUITS.

WASHINGTON, D. C., April 20, 1898.

DR. L. R. CULBERTSON, Zanesville, Ohio.

SIR—I am directed by the Surgeon-General to acknowledge receipt of your inquiry of the 18th inst., and to reply as follows:

Applicants whose eyes exhibit refractive errors requiring glasses for their correction should not be accepted for the line of the Army. Slight visual defects which, in the opinion of the examining officer, will not disqualify for service in the line, may be waived; but the same should be noted on the form for the physical examination of the recruit.

Color-blindness is not a cause of rejection, but it likewise should be noted on the form.

Applicants may, however, be enlisted in the Hospital Corps who are subject to refractive errors of vision, provided these errors are not excessive, may be corrected by glasses, and are not progressive or accompanied by ocular disease. Nor do such defects disqualify candidates for appointment in the medical department.

Conjunctivitis, or other disease of the eye, if a temporary ailment and susceptible of speedy cure without injury to vision, does not disqualify, but it should be noted on the examination form.

Respectfully,

C. G. SMART,

Deputy Surgeon-General, U. S. Army.

The foregoing letter from the Surgeon-General, U. S. Army, gives the rules to be followed. During the Civil War a great many men were enlisted who had defective sight and disease of the eyes. The wisdom of a rigid eye examination can be readily seen. Civil surgeons, unless oculists, and some army surgeons are incompetent to make a perfect eye examination, and for this reason diseases of eyes that may have existed before enlistment will be attributed to the service when applying for pension. The examiner should know whether an eye is glaucomatous, or if there is any old choroiditis or retinitis, etc.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

H. R. SWANZY, FR.C.S.I., President, in the Chair.

THURSDAY, MARCH 27, 1898.

The Aseptic Treatment of Wounds in Ophthalmic Surgery.

This paper was read by DR. A. MCGILLIVARY. After referring to the changes in the treatment of wounds brought about by Lister, the author went on to speak of recent modifications in method. These modifications consisted chiefly in reducing the strength of the antiseptic solutions used for douching purposes, and the adoption of heat sterilization for instruments and dressings. But when the importance of the natural antiseptic property, or natural immunity, of living tissues came to be more appreciated, some surgeons discarded chemical antiseptics in operations altogether, on account of their deleterious action on the tissues of the wound, and adopted sterilized physiological saline solution, as it produced no irritation, but tended to keep the tissues as nearly as possible in their physiological condition. Antiseptic solutions, however weak, irritated or benumbed the cut tissues of a wound, and thus their natural immunity became impaired. But the antiseptic solutions employed during operations had no germicidal properties unless when kept in direct contact with the micro-organisms for several hours or even days—a very undesirable procedure even if possible—so that their action was purely mechanical, and, so far as the removal of micro organisms was concerned, was limited to those on the surface, just as in the case of douching with normal saline solution. The position, then, of the aseptician and antiseptician was perfectly clear. The aseptician, by employing normal saline solution for douching purposes, and studiously preventing any chemical antiseptic from

coming in contact with the wound, trusted to the inherent antiseptic properties of the tissues themselves in warding off or destroying any micro-organisms that might have been left in, or that found access to, the wound subsequently. The antiseptician, on the other hand, by employing antiseptic solutions, impaired or destroyed the natural antiseptic property of the tissues, so that they were thus less able to cope with micro-organisms. A description of the operation for the removal of senile cataract was taken to illustrate aseptic technique in ophthalmic operations. From the time the patient entered the hospital till he was discharged, no antiseptic was allowed to come in contact with the eye. The patient's face was carefully washed on the morning of the operation with warm water and soap, special attention being paid to the folds of the eyelids. The eyelashes were cut short, so as to allow the margins of the lids to be more easily treated and to prevent the eyelashes from coming in contact either with the instruments or with the wound during the operation. By means of a special douche the conjunctival culs-de-sac were flushed with sterilized salt solution (6 per cent). The eyelids were in turn everted so as to allow their conjunctival surfaces to be carefully cleansed. This was of the utmost importance, as the conjunctival surface of the upper lid was the innermost, and therefore the most important, part of the dressing. After applying the speculum, the part of the eye corresponding to the wound was again douched, and the patient enjoined not to rotate the eye upwards till the operation was completed, so as not to allow the wound to come in contact with the margin of the eyelid for fear of contamination. Mechanical cleansing of the conjunctiva with a mop was soon discontinued, as it produced undue irritation. All instruments, lotions, mops, and dressings were sterilized by heat, so that everything that touched the eye was aseptic. Before removing the speculum the eye was douched with a gentle stream of salt solution, the solution being allowed to play over the wound to remove any cortical or capsular debris. Some of the solution invariably found its way into the anterior chamber, and was valuable in removing soft lens matter without causing any irritation. The dressing consisted of a piece of moist lint applied next to the eye, and one or two thin layers of absorbent cotton wool, the whole being kept in position by means of a vertical and horizontal strip of adhesive rubber

plaster; only the eye operated on was covered. Throughout the operation, and also during the preliminary treatment, every attempt was employed to avoid irritating the conjunctiva as much as possible, because conjunctival irritation produced hypersecretion; for the nearer the conjunctiva was to its normal condition the better for operative interference. Our motto in dealing with the conjunctiva should be: "Let sleeping dogs lie."

MR. ARNOLD LAWSON had just completed the bacteriological examination of 96 apparently normal conjunctival sacs. In only two cases had he been able to find pathogenic organisms, the staphylococcus pyogenes albus; several non-pathogenic staphylococci were found, but these were all harmless. He had not found the streptococcus at all. He therefore did not consider that it was correct to say that the normal conjunctival sac was a receptacle for micro-organisms.

MR. MACKINLAY always boiled his instruments, and used saturated boric acid lotion for the eye during operations.

DR. BRONNER considered that it was not possible to make the conjunctival sac aseptic, therefore antiseptics were necessary; he always put his knives into absolute alcohol before using them. He believed that cocaine by its action on the cornea favored suppuration.

MR. BICKERTON always boiled his instruments before the operation and again after using them. He irrigated the eye with perchloride 1 in 5,000. He had only seen two cases of suppuration, and both were in hospital practice.

Ophthalmoscopic Evidence of General Arterial Disease.—

MR. MARCUS GUNN read this paper. After referring to a case which he had shown to the Society some years ago, he went on to describe the appearances seen in the arteries affected, as part of a change in which the arteries of the body generally and of the brain in particular shared. The general reflex from the vessel was brighter than normal, the central light streak was bright, and the whole artery was of a lighter color than normal. This was due to a hyaline change in the arterial walls; as a consequence of this change the circulation in the veins was impeded, and in some cases the vein became invisible where crossed by an artery. As a further result of this venous obstruction, there was set up an oedema of the retina, which

might be either general or partial, the effect of which was to blur the details of the fundus. In some cases the size of the arteries was not uniform, the vessel would be narrowed at one spot or increased in a certain part of its course; this change was most often seen in the small arteries in the region of the macula. The arteries were sometimes very tortuous. The central streak was narrow, bright, and with points of greater brilliance in it; this condition was also seen in hypermetropia, and after optic neuritis in the vessels arising from the optic disc, but in diseased vessels it was those of the second and third magnitude which should be looked at. There was a loss of translucency of the arteries, so that where the vein passed behind the artery it could not be seen. On the other hand, if the vein covered the artery, the artery could be unduly seen through the blood column in the vein, because of the thickening of the arterial coat, and partial emptying of the vein by the thickened artery as the two crossed each other. As a consequence of the hardness of the arteries, there was an interruption of the venous current, the vein was distended, and often hæmorrhages took place along its course. The change in the arteries was a change in the coats, an irregular thickening; with this there was a loss in carrying power, and hence tortuosity. The change in the veins was due to the damming back of the blood; the walls of the veins and capillaries underwent degeneration, hence arose the hæmorrhages. The question of etiology was one for the physician. The change usually occurred between 40 and 50. If well marked at this age the prognosis was grave. The patients had often been subject to migraine, indigestion, and gout. Chronic alcoholism was also a factor in the causation. In some of the cases known as hæmorrhagic glaucoma this affection of the vessels was the cause of the change which gave rise to the hæmorrhages. It was in close association with renal disease, but the vessels of the eye and brain might be affected before the kidney. He had examined the eyes of all the patients in the National Hospital at one time who had had hemiplegia. In 7 the arteries were normal, in 10 they were affected, and in 7 the changes were quite characteristic.

Remarks were made by DRs. JAMES TAYLER, ALDREN TURNER, BRONNER, and MR. MACKINLAY; and MR. GUNN replied.

BOOKS AND PAMPHLETS.

DIE BEDEUTUNG DER AUGENSTOERUNGEN FUER DIE DIAGNOSE DER HIRN-UND RUECKENMARKS-KRANKHEITEN. (THE VALUE OF EYE-AFFECTIONS IN THE DIAGNOSIS OF CEREBRAL AND SPINAL DISEASES). By DR. OTTO SCHWARZ. Berlin: 1898, S. Karger. Price, 2.50 marks.

This is a most complete and pre-eminently practical manual. Every page of it shows the author's careful study of the subject and a large personal experience. The book is so arranged that it is easily used as a book of reference and should have a wide circulation. We should think its translation into the English language would well repay the enterprise.

ON PARTIAL, STATIONARY CATARACTS. By HUGO WINTERSTEINER, M.D. (20 colored plates), and **DIE ENTWICKELUNG DES AUGES** (DEVELOPMENT OF THE EYE). By DR. A. E. FICK (9 colored plates). Breslau: J. N. Kern. New York: Lemke & Buechner.

These are Nos. XI and XIII of the collection of ophthalmic plates for teachers, edited by Prof. H. Magnus, of Breslau. Not only these two numbers, but all of them which have come to our personal knowledge, deserve only the highest praise. We are glad to see No. XI in the English language and hope to see them all translated. ALT.

PAMPHLETS RECEIVED.

- "Pelvic Surgery," by A. V. L. Brokaw, M.D.
- "Conjunctival Opacity of the Cornea," by Dr. H. Moulton.
- "My Recent Work in Appendicitis," by Dr. A. C. Bernays.
- "Two Unusual Cases of Strabismus," by Dr. F. W. Marlow.
- "An Exhibition of Radiographs," by Dr. A. V. L. Brokaw.
- "Recurring Internal Ophthalmoplegia," by H. F. Hansell, M.D.

"Natural Gas and Eustachian Inflammation," by J. J. Kyle, M.D.

"Four Recent Cases of Excision of the Malleus, etc.," by Ch. H. Burnett, M.D.

"Anomalies in the Functions of the Extrinsic Ocular Muscles," by F. Buller, M.D.

"Aqueous Extract of Suprarenal Capsule in Ophthalmic Practice," by J. J. Kyle, M.D.

"Shall We Operate Through the Upper or Lower Canaliculus," by S. C. Ayres, D.M.

"The Surgical Treatment of Acute Inflammation of the Middle Ear," by E. B. Dench, M.D.

"Notes Upon Some Low-Toned Tuning Forks for Clinical Purposes," by E. D. Spear, M.D.

"Intra-Tympanic Surgery; Especially in Chronic Purulent Otitis Media," by Ch. H. Burnett, M.D.

"Chronic Tympanic Vertigo; Its Cure by tympanotomy and Removal of the Incus," by Ch. H. Burnett, M.D.

MISCELLANY.

BACTERIA IN THE NORMAL CONJUNCTIVA AND THE EFFECT UPON THEM OF ASEPTIC AND ANTISEPTIC IRRIGATIONS. THE STAPHYLOCOCCUS EPIDERMIDIS ALBUS (WELCH) A REGULAR INHABITANT OF THE NORMAL CONJUNCTIVA.—As a result of a series of experiments upon one hundred individuals, DR. A. L. RANDOLPH, of Baltimore (*Archives of Ophthalmology*, Vol. xxvi, No. 3, 1898), concludes as follows:

I. The normal conjunctiva always contains bacteria. Of these the staphylococcus epidermidis albus is found with such frequency that it must be regarded as a regular inhabitant of this situation. This coccus and probably other bacteria found in this locality are usually of only slight if any pathogenic power. It should be remembered, though, that bacteria, ordi-

narily non-pathogenic, may become harmful under certain favoring conditions, such as the bruising of the tissues by instruments or the irritation resulting from chemical substances.

2. Neither the irrigation with sterilized water nor the instillation of a sublimate solution (1 : 5000) produces sterility of the conjunctiva, and inasmuch as both measures are futile and possibly harmful they may just as well be abandoned. These methods of sterilizing the conjunctiva are the ones usually employed by ophthalmologists, and hence the choice of them for testing this question.

The most important essential of a germicide which is to be used upon the conjunctiva is that it be absolutely free of irritating properties, and, furthermore, it should be demonstrable that this germicide will destroy the germs most commonly met with in the normal conjunctiva. It goes without saying that an antiseptic which has these qualities would be indispensable in all operations on the eye.

3. In operating upon the normal conjunctiva, as in cataract operations, the surgeon in the present state of our disinfecting armamentarium would do well to consider the subject of antisepsis and asepsis chiefly, if not solely, in connection with the hands, instruments, cocaine, and atropine.

ANOTHER IMPORTANT ADDITION HAS BEEN MADE TO OUR KNOWLEDGE OF THE RETINA BY RAMON Y CAJAL. He has made out that the cones are to be considered from the histogenetic standpoint as a more highly-developed form of the rods. This works to the favor of those theories of the sensation of light which regard the color-sense of the cones as being the result of a gradual development out of the achromatic sensation furnished by the rods. According to some observers, the cones in the periphery of the retina resemble the rods very much in appearance; if it could be made out that in the dichromatic retinal zone (the zone in which reds and greens are not perceived) there is an intermediate form of cone (a form with only a few basilar threads, for instance), that would also be a fact of much theoretical interest. The histologists would do well to investigate the question with more care than has yet been done, and with modern methods.—*Science*.